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ABSTRACT

This study examines the influence of perceived risks as well as the understudied role of benefits on alcohol and marijuana use among adolescents and adults. Ninth grade students and young adults were asked about the perceived risks and benefits of alcohol and marijuana use. Analyses showed a consistent pattern: perceived benefits were more predictive of actual drinking and intentions to smoke marijuana, over and above perceived risks, previous experience, and age. Implications for policy from these findings are highlighted. (Contains 14 charts.) (GCP)

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Beyond Invulnerability: The Importance of Benefits in Adolescents' Decisions to Drink Alcohol and Smoke Marijuana

by

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Beyond invulnerability: The importance of benefits in

adolescents' decisions to drink alcohol and smoke marijuana

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When it comes to risky health behaviors, a great deal of research has been dedicated to understanding why knowledge about negative outcomes (or risks) does not seem to prevent individuals from engaging in health-threatening behaviors. However, the ability of positive outcomes (or benefits) to motivate these behaviors tends to be left out of the discussion. The focus on risk may be due to the assumption, by both researchers and the lay public, that individuals take risks mainly because they fail to see how vulnerable they are to the negative outcomes, especially during adolescence (Weinstein, 1980; 1983; 1984). Therefore, the current study will examine the influence of perceived risks as well as the understudied role of benefits in alcohol and marijuana use among adolescents and adults.

Ninth grade students and young adults were asked about the perceived risks and benefits of alcohol and marijuana use. Respondents were first given a scenario that provided a context for their assessments. Second, they were asked about short-term outcomes contingent upon drinking alcohol and smoking marijuana. Third, they were asked about their experiences with and intentions to drink alcohol and smoke marijuana.

Analyses showed a consistent pattern: perceived benefits were more predictive of actual drinking and intentions to smoke marijuana, over and above perceived risks, previous experience and age.

Two implications for policy emerge from these findings. In the past, researchers have often concluded that adolescents are "irrational" in their decision-making because they engage in risky behaviors despite their knowledge of the risks. Such claims of "irrationality" could be used to justify restrictive policies that limit adolescents' ability to make their own decisions. However, if adolescents are making rational decisions, and perceived benefits are weighed heavily in their decision, there is an alternative to limiting their freedom of choice. New messages could be crafted which focus on how adolescents can obtain benefits in safer ways.

The importance of benefits for behavioral choice also points to the need for another change in health messages. This study found that perceived benefits loomed larger in respondents' decision-making, whereas perceived risks had relatively little influence. If policy-makers fail to include in their discussion of risky behaviors the possible positive, as well as negative, outcomes, both the messenger and the message could lose credibility and influence on future health choices.

Beyond Invulnerability: The Importance of Benefits in Adolescents' Decisions to Drink Alcohol and Smoke Marijuana

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1. There is a long-standing question in both the judgement and decision making and medical decision making literatures: why do individuals often fail to behave as they should? Or as we think they should?

2. My research attempts to address this question by, first, understanding what actually is important in individuals' decision making.

3. Second, I examine how the discrepancy between theory and behavior can be partially explained by our theories' failure to include things that they should.

4. I will discuss these issues through a study which addresses how the dominant theories used to explain adolescent risk taking may be missing a component vital to understanding their decisions.

5. The aim is to identify and include meaningful aspects of the decision environment in order to improve our models of decision making.

Risk Framework

- Why do individuals take risks with their health?
  - Deterrent value of risk
  - Motivational pull of benefits
- Perceived Invulnerability
  - mixed findings
  - limited impact on behavior

1. When it comes to risky health behaviors, a great deal of research has been dedicated to understanding why knowledge about negative outcomes (or risks) does not seem to prevent individuals from engaging in health-threatening behaviors. However, the ability of positive outcomes (or benefits) to motivate behavior tends to be left out of the discussion.

2. The focus on risk may be due to the strongly held assumption, by both researchers and the lay public, that individuals take risks mainly because they fail to see how vulnerable they are to the negative outcomes, especially during adolescence

3. Hence, P.I. has become a dominant paradigm for both theoretical development and intervening at the community level

4. However, mixed findings in the P.I. literature. Some studies have found support for the theory: individuals who engaged in risky behaviors perceived themselves to be less vulnerable. However, many studies have found the opposite relationship.

5. In addition, interventions designed to lower perceived invulnerability have not been as effective as expected in reducing risk-taking behavior.

6. Clearly, awareness of risks, alone, does not seem to translate into safer behavioral choices

Importance of Benefits

- Risk is only one part of the decision making process
- Decision theory includes both risks and benefits
- Benefits are not novel in risk perception
  - Alcohol Expectancy: includes benefits but not risks
  - General Health Models: designed for voluntary, preventive behavior

1. An emphasis on perceived risk alone may be inadequate to change behavior because risk is only part of the decision making equation. What is missing is how adolescents perceive the benefits of risky behaviors.

2. The decision making literature has argued that individuals should consider both the risks and benefits (e.g., a cost-benefit or D.A. model) when making decisions

3. Alcohol expectancy researchers have found that perceived benefits are an important predictor of drinking behavior. However, tend to leave out risk perceptions in their work.

4. General health models such as the Theory of Planned Behavior, Health Belief Model, Protection Motivation Theory, and Stages of Change Theory usually do include some sort of weighting procedure that combines perceptions of both risks and benefits.

5. However, the original intent of these models was to explain voluntary, preventive behavior motivated by the desire to avoid disease or comply with physician's recommendations. Consequently, these models tend to examine the risks of high-risk behaviors relative to the benefits of preventive behaviors and/or stopping the high-risk behavior, rather than the perceived benefits of the high-risk behavior itself.

Research Aims

- Integrate disparate lines of research so as to include both risks and benefits
- Beyond the question: Why does knowledge of risk fail to deter behavior?
- Improved model asks:
  - First, is risk taking "reasonable"?
  - Second, are there other avenues for intervention?

1. Aim of this research is to understand how perceived benefits motivate individuals to engage in risky health behaviors, compared with how perceived risks deter such behaviors. In order to do this, one must integrate these lines of research into one coherent theoretical framework which facilitates examining both sets of perceptions.

2. By including both perceived risks and benefits, one can begin to gain a better understanding of the nature of adolescents' risk taking.

3. More importantly, this integrated approach allows one to go beyond the question of, Why is it that, despite knowledge of the high-level of risk, adolescents continue to engage in health-threatening behaviors?

4. Rather, by including what may matter most to adolescents' decisions, we can ask (a) given their understanding, is their behavior reasonable? And, if so, (b) does this improved model of their decision making point towards unexplored avenues for intervening?

5. The assumption in the risk-perception approach is that adolescents engage in risky beh. b/c fail to accurately perceive their vulnerability. However, stepping away from that paradigm and its assumptions, we can assess whether (a) they are undervaluing the risk, (b) overestimating the benefit, (c) including other components we don't believe they should (such as inaccurate beliefs about peer beh.), (d) or expressing a different set of values not reflected in our models, such as was evidenced in my open-ended data. Engaging in risky behaviors allowed them to feel more mature; moreover, drinking alcohol served as a "social lubricant," allowing them to feel more at ease in their social group. Only in the first instance would risk ed. be an appropriate policy. And given limited resources, it is our responsibility to create effective and appropriate risk-reduction messages.

Experience Matters

- Judgment and Decision Making
  - not only how individuals perceive risks, but how they make choices
- Choices are sensitive to previous experiences
- Mixed findings
  - confound of experience and age

1. As my research is grounded in J D/M, allows me to ask not only how individuals perceive risks, but how they integrate that and other information to make choices

2. One of the most robust findings in research on judgment and choice behavior is that our decisions are not made and evaluated in isolation. Rather, they are extremely sensitive to context, and one of the most compelling contexts is our experience w/ previous outcomes.

3. The findings in the experience lit. are mixed-- sometimes experience is related to underestimating the harm of risk-taking, but others have found the opposite relationship

4. May partially be b/c, in the risk perception lit., experience is often confounded with age. Moreover, for adolescents age has often been used as an explanatory variable-- they take risks b/c they're teenagers! However, in addition to being adolescents, they also are acquiring new experiences. Moreover, from an applied standpoint, I can't really change the fact that children go on to become adolescents, but I may be able to influence how they perceive and integrate their experiences into future decisions.

5. A possible explanation for the mixed findings may be the confound I just mentioned-- type of experience examined and age of the respondents. Adolescents, typically, have not been taking risks long enough to experience long-term, negative outcomes. By contrast, adults have usually had enough opportunity to experience (either personally or vicariously) the harmful effects of risk-taking. Therefore, the influence of experience may depend on whether an individual has engaged in risk-taking in the short-run and experienced mainly short-term positive outcomes, or been taking risks long enough to

5

Research Questions

- Theoretical:
  - How do perceived benefits and risks relate to drinking alcohol and smoking marijuana?
  - What role do age and experience play?
- Applied:
  - Can a more integrated approach lead to an improved model of adolescent risk taking?

1. This study will first ask how both perceived benefits and risks relate to drinking alcohol and smoking marijuana. Included both perceived risks and benefits in order to determine if benefits are adding anything psychologically "new" or are simply the inverse or absence of risk.

2. Will expand upon existing work by disentangling the effects of experience from age on risk perception by including adolescents as well as adults.

3. Applied question...

Sample (n=304)

- 160 9th graders
  - 96 females, 64 males
  - mean 15 years old (range 14-16)
- 144 Adults
  - 90 females, 54 males
  - mean 25 years old (range 20.5 - 31)
- Ethnicity
  - 68% Caucasian, 12.5% Asian, 3% Latino, 3% African American, 12% mixed race
- Retention Rate:
  - 89% from T1 to T2 (89% of 9th graders; 89.5% of adults)
  - 100% from T2 to T3

1. Respondents were participants in an on-going longitudinal study w/ Susan Millstein and Bonnie Halpern-Felsher from UCSF

2. The data presented are from rounds 2 and 3 of the longitudinal study, conducted approximately 6 months apart.

3. Adolescents were, on average, 15 years old, and were recruited through several school districts in Northern Cal.

4. Adults were, on average, 10 years old, and were recruited through local medical and graduate schools

5. More females than males

6. Racial/ethnic groups representative of the make-up of the North Bay Area

7. There was no systematic variation in retention from T1 to T2

8. Complete re-capture from T2 to T3

Risk and Benefit Perceptions

- *If I have a couple of drinks of alcohol* (smoke 1 joint) *at a party…*
  - There's a _____% chance that I'll get sick
  - There's a _____% chance that I'll do something that I'll later regret
  - There's a _____% chance that I'll like the buzz (*high*)
  - There's a _____% chance that I'll have a better time at the party if I drink (*smoke*)

1. Respondents were asked about their perceptions of alcohol at T2 and perceptions of marijuana at T3.

2. They were first given a scenario which provided the context for both their risk and benefit assessments:

"Now imagine you are at a party. During the party you have a COUPLE OF DRINKS OF ALCOHOL (like 2 glasses of wine, beer or hard liquor).

OR smoke 1 JOINT (a marijuana cigarette). Even if this is something you'd never do, please try to imagine it."

3. Next, they were asked about specific **short-term** outcomes contingent upon drinking-- getting sick, doing something they'll regret, getting a buzz they'll like, having a better time.

4. Finally, respondents were asked to provide likelihood estimates that could range anywhere from no chance (0%) to a certain chance (100%) of the outcomes occurring

Measures of Experience and Behavior

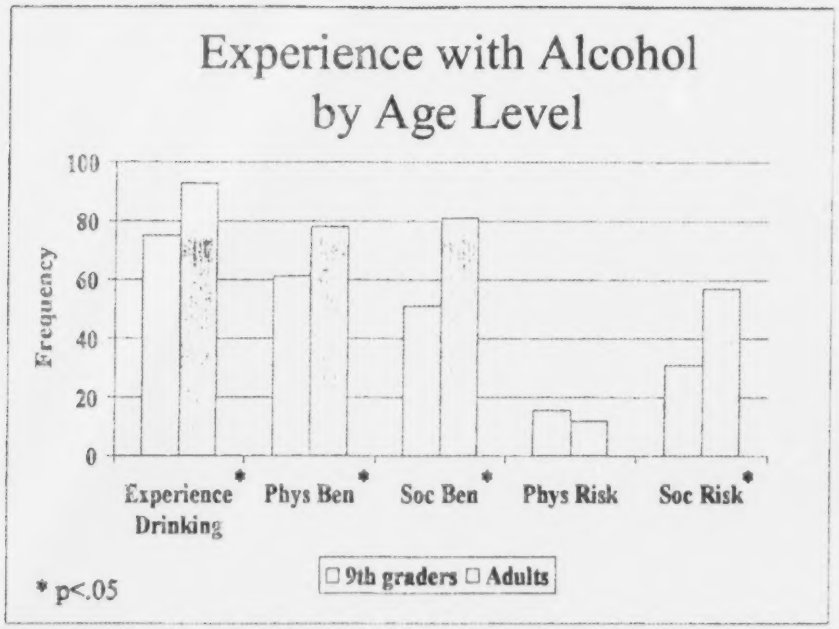
- T2: Experience Drinking: ever drank
- T3: Experience Smoking Marijuana: ever smoked
- T3: Drinking in last 6 months
- T3: Intent to Smoke in next 6 months

1. Experience drinking was measured at T2 by asking how many times they drank alcohol, which was collapsed into whether they had experience or not

2. Experience smoking marijuana was measured at T3 by asking if they had ever smoked marijuana in their entire life

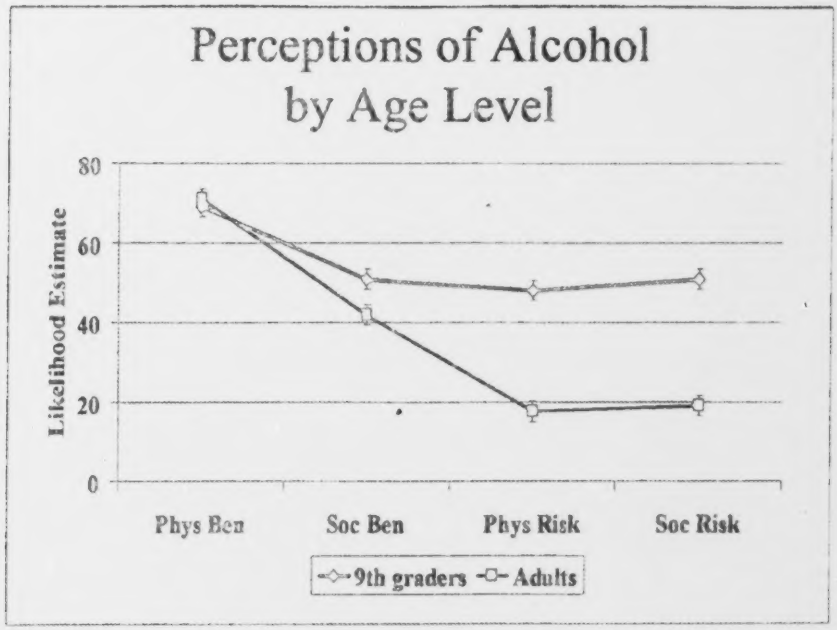
3. Actual drinking behavior was measured 6 months later at T3 using a 5-point likert scale, ranging from "none" to "more than 10 times."

4. Intent to smoking marijuana was measured at T3 using a 100-point likelihood scale, ranging from 0-100% chance.



1. Adults have more experience drinking as well as experience of all the outcomes except for physical risk, very low for both adolescents and adults

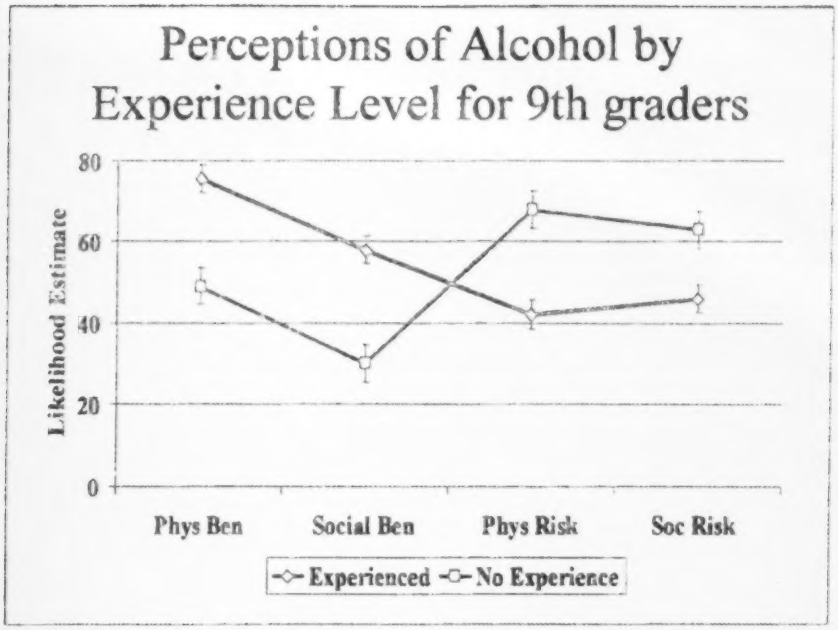
2. Overall pattern, both adolescents and adults have experienced more benefit than risk, running counter to the messages generated about alcohol.



1. Scale represents likelihood estimates

2. 9th graders see high benefit and risk-- expected from this sort of risky behavior and why it's alluring

3. adults-- a shift to high benefit and lower risk



1. Only include 9th graders because there were only 3 adults with no experience.

2. When the 9th graders were examined as a whole, collapsing across experience, they perceived both the risks and benefits to be high.

3. However, a different pattern emerges when we examine the adolescents' perceptions by level of experience.

4. Here we see that those adolescents with experience perceive the benefits to be high and the risks to be low. The same pattern as with the adults, almost all of whom are experienced drinkers.

5. However, the opposite pattern emerges among those adolescents with no experience.

6. This seems to be a story about experience, not maturation, because experienced drinkers, whether adolescents or adults, perceive alcohol similarly.

7. Is this reflecting reality? These perceptions certainly mirror the experiences of both adolescents and adults, which were mostly positive

8. Is it a post-hoc justification? By examining how perceptions predict behavior, we'll be able to shed some light on that question.

Predicting Drinking Alcohol from Experience and Perception, Model 1 9th graders

	Odds of Drinking
Experience	increase in likelihood 12X
Physical Risk	--
Social Risk	--
Physical Benefit	--
Social Benefit	--
R^2	54%

1. Could not include adults in the model because 92% of them drank, so no variance to explain. Therefore, the model only includes 9th graders

2.. Because of the skewed distribution of drinking behavior among the adolescents, drinking behavior was collapsed into a binary variable-- "drank" and "did not drink" in the last 6 months. Logistic regression was used to determine the relationship between perceptions and experience, measured at T2, and actual drinking behavior measured 6 months later at T3.

3. First examined experience. Not surprisingly, experience was a significant predictor of drinking behavior-- more experienced adolescents were more likely to drink

4. But did not predict the impact of experience, increasing the likelihood of drinking by nearly 12 times.

5. Most importantly, remember that the reported experiences which are relevant were the FAILURE to experience the neg. outcomes that have been drilled into adol. heads, combined with the experience of UNEXPECTED benefits, such as social goodies and pleasant physical sensations.

Predicting Drinking Alcohol from Experience and Perception, Model 2 9th graders

	Odds of Drinking
Experience	increase in likelihood 11X
Physical Risk	*ns*
Social Risk	*ns*
Physical Benefit	increase in likelihood 22%
Social Benefit	*ns*
Total R^2	57%

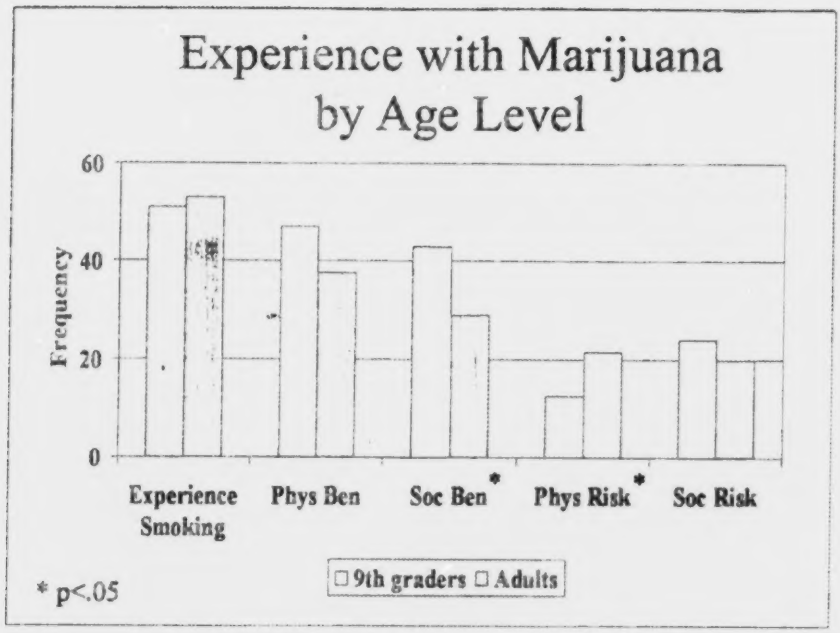
1. Step 2, entered perceptions.

2. First, note that perceived risks were not significant predictors of drinking.

3. Second, perceived benefits are not simply the inverse or absence of risk or a proxy for experience-- perceived benefits represent an independent psychological construct and independently predict drinking, while controlling for experience and perceived risks.

4. Examining the role of perceived benefits, for every 10% increase in perceived physical benefit, the likelihood of drinking increased by 22%

5. The whole model accounted for 57% of the variance.



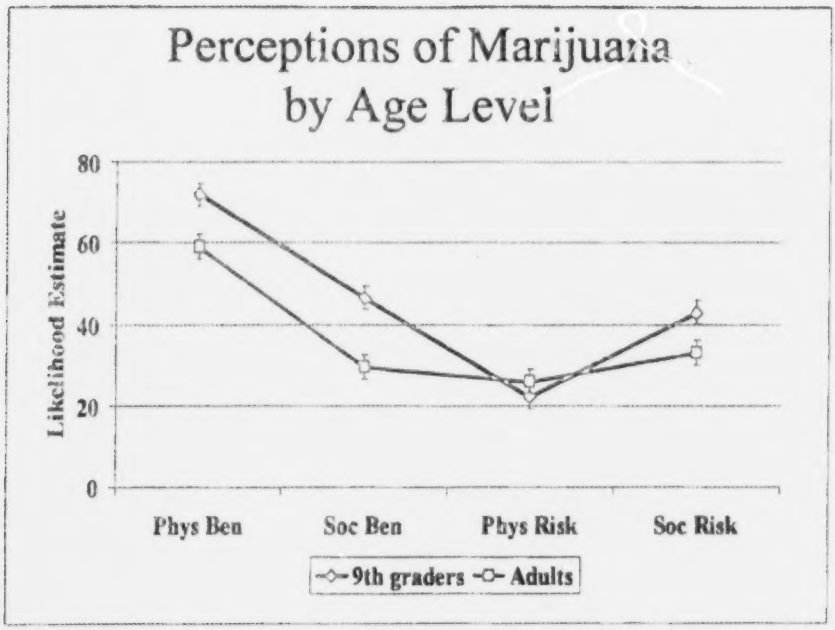
1. Shift to examine marijuana

2. With marijuana, we see that 9th graders and adults have similar experiences.

3. Except here, unlike with alcohol, where the adults had more experience than the adolescents, with marijuana, a different pattern emerges.

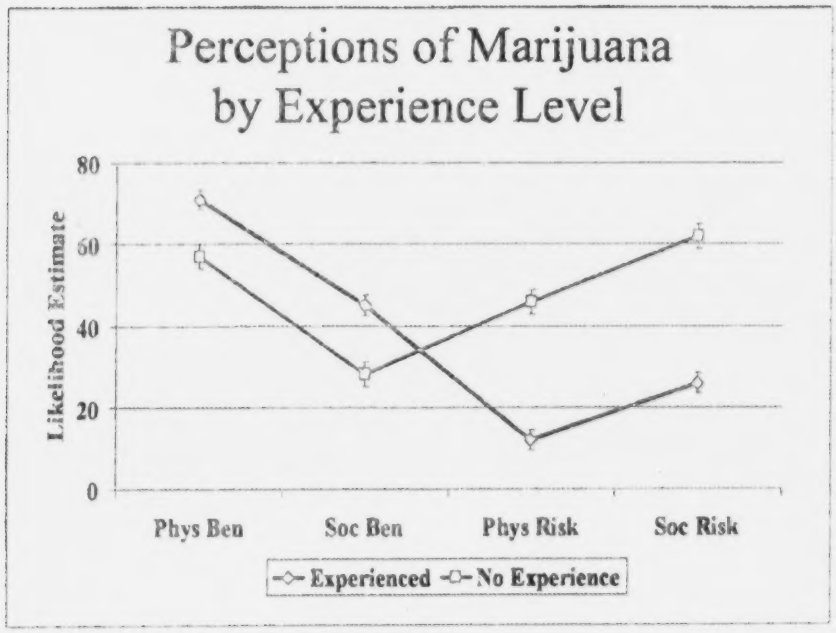
4. The adolescents more likely to have experienced the benefits, less likely to have experienced physical risk, and there's no statistical difference in their experience of the social risks

5. Overall, the pattern is, again, that both adolescents and adults have experienced more benefits than risks



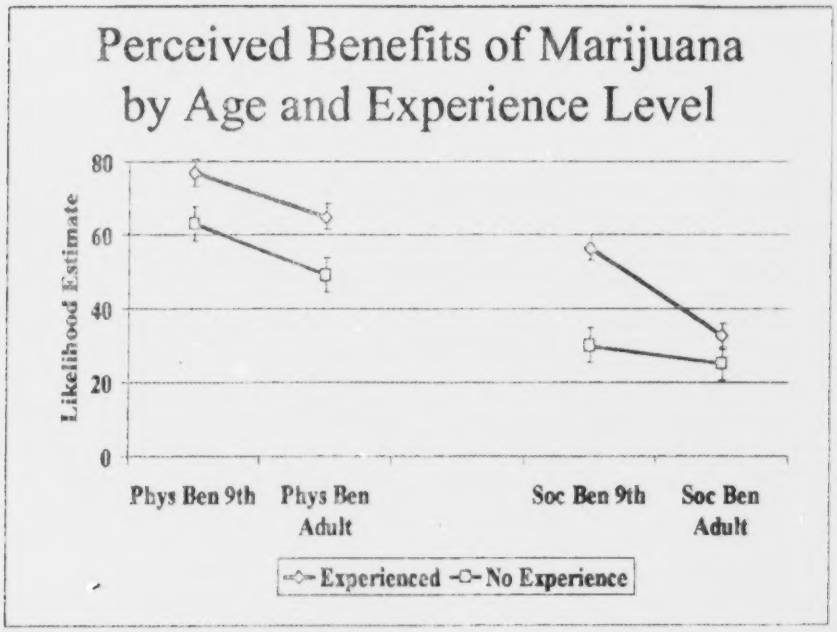
Interestingly, also unlike with alcohol, which is a legal drug (though not for 9th graders), for marijuana the adolescents perceive the benefits to be greater than the risks, in particular the physical benefit. A similar pattern, but not as extreme, is seen with the adult respondents.

Moreover, the adolescents perceive the benefits to be significantly more likely than the adults do



Like with alcohol, experienced respondents perceive the benefits to be high and the risks to be low

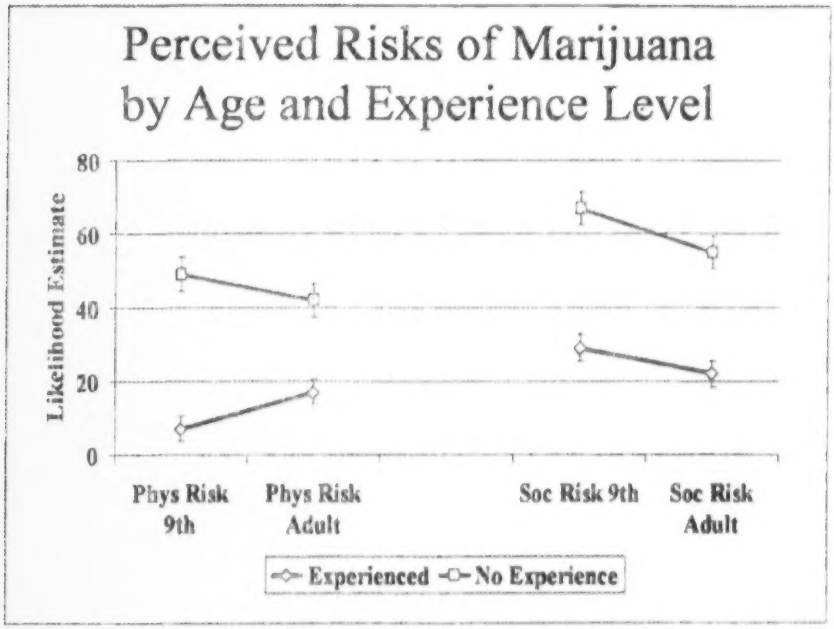
Interestingly, however, we don't see the same cross-over pattern for respondents with no experience. They perceive both the benefits and risks to be relatively high.



Examining both age and experience level, we see:

1. The main effect of experience-- those with experience perceive the benefits to be greater than those without experience.

2. Interaction of age and experience for the social benefits-- experience has a greater impact on 9th graders' perceptions of the social benefits such that 9th graders with experience perceive the social benefits to be significantly greater than 9th graders without experience, whereas there is no difference in perception between adults with and without experience.



Again, shows the main effect of experience-- those with experience perceive less risk

Interaction of age and experience on perceived physical risk such that experience, again, had a greater impact on 9th graders. There is a bigger difference in perceived risk between 9th graders with and without experience than between the adults with and without experience.

Predicting Smoking Marijuana from Age, Experience and Perceptions, Model 1

	Odds of Smoking
Age	decrease in likelihood 22%
Experience	--
Physical Risk	--
Social Risk	--
Physical Benefit	--
Social Benefit	--
R^2	16%

1. Now onto prediction.

2. Again used logistic regression to predict intent to smoke marijuana because of the skewed distribution.

3. Could include both adolescents and adults because there was enough variance in both groups:

35% of adults intended to smoke marijuana and 44% did not

64% of adolescents intended to smoke marijuana and 17.5% did not

4. Step 1, entered age

5. Unlike other risky behaviors which increase with age, as these respondents got older, they were less likely to smoke, reporting a reduction in intentions to smoke of 22%

6. But this model accounted for only 16% of the variance.

Predicting Smoking Marijuana from Age, Experience and Perceptions, Model 2

	Odds of Smoking
Age	decrease in likelihood 13%
Experience	increase in likelihood 10X
Physical Risk	--
Social Risk	--
Physical Benefit	--
Social Benefit	--
R^2	38%

1. Experience smoking was added and significantly improved the model, increasing the variance explained by 22%.

2. As expected, more experienced respondents intended to smoke more.

3. This finding first tells us that experience is not redundant with age as it adds additional explanatory value to the model over-and-above age.

4. Moreover, the reported experiences were similar to those with alcohol--- a FAILURE to experience neg. outcomes combined with the experience of UNEXPECTED benefits

Predicting Smoking Marijuana from Age, Experience and Perceptions, Model 3

	Odds of Smoking
Age	decrease in likelihood 11%
Experience	increase in likelihood 4X
Physical Risk	*ns*
Social Risk	*ns*
Physical Benefit	increase in likelihood 14%
Social Benefit	increase in likelihood 36%
Total R^2	58.5%

1. In the final model, perceptions were added .

2. First, note that perceived risks were not significant predictors of smoking.

3. Second, perceived benefits significantly improved the fit of the model after controlling for the effects of age, experience and perceived risks, accounting for an additional 20.5% of the variance.

4. Examining the role of perceived benefits, for every 10% increase in perceived physical benefit, the likelihood of smoking increased by 14%

5. for every 10% increase in perceived social benefit, the likelihood of smoking increased by 36%

6. However, it appears as though the roles of age and experience were reduced by adding perceptions.

Theoretical Contributions

- Insight into "irrational" adolescent decision making
- Unexpected benefits loom large
- Unexperienced risks lose influence
- Failure to include both leads to loss of credibility

1. By excluding benefits in past studies, researchers could not compare the deterrent value of risks relative to the motivational pull of the benefits.

2. By leaving out this piece, they could reach the incorrect conclusion that adolescents cannot or do not make "rational" decisions. However, the logic was not missing from the adolescents' choices, but from the theories.

3. By developing a more inclusive model which includes the relevant set of perceptions and experiences, gain a better understanding that adolescents are not unaware of the risks. Rather, perceived benefits of alcohol were significant predictors, over-and-above the perceived risks and level of experience, in predicting actual drinking 6 months later.

4. Furthermore, as an indication of the robust nature of this finding, perceived benefits proved to be a more important predictor then perceived risks in predicting intent to smoke, also while controlling for age and experience level.

5. Also, it appears as though the effects of age and experience are partially mediated through perceptions of the benefits.

6. Implications for policy are striking.

7. If policy-makers fail to include in their discussion of risky behaviors adolescents' actual experiences, including the possible positive, as well as negative, outcomes, both the messenger and the message could lose credibility and, ultimately, lose influence on adolescents' future health choices.

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